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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/764,670 | 01/26/2004 | Jean-Yves Simon | TI-36989 | 9476 |

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| EXAMINER | |
|---|---|
| ALPHONSE, FRITZ | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2112 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 01/28/2009 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/764,670 | SIMON, JEAN-YVES | |
| | Examiner | Art Unit | |
| | FRITZ ALPHONSE | 2112 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *29 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

**DETAILED ACTION**

1. This Office Action is in response to the communication filed on 10/29/2008. Claims 1-26 are pending.

2. In view of the Appeal Brief filed on 9/30/2008, PROSECUTION IS HEREBY REOPENED. As set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 6, 12, 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamada (U.S. Pat. No. 6,353,553) in view of Hsu (U.S. Pub. No. 2005/0111567).

As to claim 1, Tamada (fig. 34) shows a method, including: transferring a data block between a flash memory (102) and a memory controller (400) and computing an ECC for said data block while transferring the data block (col. 20, lines 23-27; col. 20, lines 36-43). Furthermore, according to Tamada, a system is being used for storing the ECC in a plurality of registers while transferring the data block (col. 20, lines 41-43).

Tamada does not explicitly disclose using a switching mechanism for storing the ECC in the registers.

However, the limitations are obvious and well known in the art, as evidenced by Hsu (see paragraph [0028]; fig. 2).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to incorporate into Tamada's system (figure 34) a switch (204) coupled to the controller, as disclosed by Hsu. Doing so would provide an adaptive data in which control information representing the values of coefficients applied to taps of the data are updated and stored non-volatile.

As to claim 6, Tamada (fig. 34) shows a system, comprising: a flash memory (102); a controller (400) coupled to the flash memory (102); and said controller (400) is configured to shift a data block between the flash memory and the controller while computing an ECC for said data block (col. 20, lines 23-27; col. 20, lines 36-43). Furthermore, according to Tamada said system is configured to store the ECC in a plurality of registers, while the controller shifts the data block (col. 20, lines 41-43).

Tamada does not explicitly disclose a switch coupled to the controller and selectively stores the ECC using the switch. However, the limitations are obvious and well known in the art, as evidenced by Hsu (see paragraph [0028]; fig. 2). See the motivation above.

As to claim 12, Tamada discloses a system including a means for storing a data block (which represents flash memory 102); a means for controlling the data block (corresponding to controller 400); a means for computing an ECC of the data block and shifting the data block between the means for storing and the means for controlling while computing an ECC for said data block (col. 20, lines 41-43).

Tamada does not explicitly disclose a means for selectively storing the ECC in a plurality of registers while shifting the data block.

However, in the same field of endeavor, Hsu teaches a switch coupled to the controller for selectively storing the ECC in a plurality of registers while shifting the data block (see paragraph [0028]; fig. 2). See the motivation recited in claim 1 above.

As to claim 18, Tamada (fig. 34) discloses a memory controller system configured to couple to a memory, comprising: a memory interface (102, 400); an ECC engine (404) configured to compute an ECC while transferring a data block between the ECC engine and memory (col. 20, lines 23-27; col. 20, lines 36-43). Furthermore, according to Tamada said system is configured to store the ECC in a plurality of registers, while the controller shifts the data block (col. 20, lines 41-43).

Tamada does not explicitly disclose a switching mechanism coupled to the ECC engine configured to selectively store the ECC in a plurality of registers using the switching mechanism while transferring the data block.

However, the limitations are obvious and well known in the art, as evidenced by Hsu (paragraph [0028]; fig. 2).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to incorporate into Tamada's system (figure 34) a switch (204) coupled to the controller, as disclosed by Hsu. Doing so would provide an adaptive data in which control information representing the values of coefficients applied to taps of the data are updated and stored non-volatile.

As to claim 19, the claim has substantially the limitation of claim 6; therefore, it is analyzed as previously discussed in claim 6 above.

5. Claims 2-4, 7-10, 13-16, 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamada (U.S. Pat. No. 6,353,553) in view of Hsu (U.S. Pub. No. 2005/0111567) and further in view of Eggleston (U.S. Pat. No. 6,906,961).

As to claims 7-9, 13-15, 20-23 Tamada does not explicitly disclose the flash memory is a NAND Flash memory; the system stores a first portion of the ECC in a first register; and storing a second portion of the ECC in an alternate register if the first register is full.

However, in the same field of endeavor, Eggleston discloses a system, wherein the flash memory is a NAND Flash memory (col. 5, lines 40-49); the system stores a first portion of the ECC in a first register; and storing a second portion of the ECC in an alternate register if the first register is full (fig. 8; col. 16, lines 45 through col. 17 line 5). Eggleston discloses a system, wherein the controller transfers contents of all registers to memory (col. 16, lines 9-30).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to improve upon the flash memory device, as disclosed by Eggleston. Doing so

would increase the likelihood of a loss of data if the ECC is damaged or even the loss of the ability to access the affected sector occurring when such an error happens.

As to claims 10 and 16, Tamada does not explicitly disclose a switch configured to select the alternate register. However, the limitation is obvious and well known in the art, as evidenced by Hsu (see paragraph [0028]; fig. 2).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to incorporate into Tamada's system (figure 34) a switch (204) coupled to the controller, as disclosed by Hsu. Doing so would provide an adaptive data in which control information representing the values of coefficients applied to taps of the data are updated and stored non-volatile.

As to claims 2-4, method claims 2-4 correspond to apparatus claims 7-9; therefore, they are analyzed as previously discussed in claims 7-9 above.

As to claims 24-26, Tamada does not explicitly disclose a system, wherein the registers are in the controllers. However, the limitations are disclosed by Eggleston (col. 16, lines 9-30). See the motivation above.

6. Claims 5, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamada in view of Hsu and further in view of Acton (U.S. Pat. No. 6,883,131).

As to claims 5, 11 and 17, Eggleston and Hsu do not disclose a system, wherein the controller is configured to compute the ECC while performing the Exclusive-OR function. However, the limitation is obvious and well known in the art, as evidenced by Acton (col. 7, lines 30-47).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to improve upon the data processing system, as disclosed by Acton. By doing so, a different error correction code may be used which provides double-bit or greater error correction capability.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse, whose telephone number is (571) 272-3813. The examiner can normally be reached on M-F, 8:30-6:00, Alt. Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman, can be reached at (571) 272-3644.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3824

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/FA/

Examiner, Art Unit 2112

January 15, 2009

/Scott T Baderman/

Supervisory Patent Examiner, Art Unit 2112